

23. The device of claim 22, wherein the step of executing said simulator using said input data during the execution of said simulator further includes the steps of,

(d) editing the data selected during the selecting step (b) thereby creating edited data, the edited data representing said input data used by said simulator during said execution of said simulator.

### REMARKS

Claims 1 through 19 and new claims 20 and 23 are in this application.

Exhibits 1, 2, 3, 4, 5, and 6 are attached hereto for use by the examiner during a reading of these remarks.

The examiner objected to the drawings, and, in particular, figure 22b1 of the drawings. Attached hereto, please find **Exhibit 1** which contains a proposed drawing correction. Assuming that this proposed drawing correction is approved by the examiner, the drawings will be corrected and formals will be submitted when an indication of allowance of one or more of the claims in this application is received.

The examiner objected to the Abstract, indicating that the Abstract is too long. A new (and shorter) Abstract of the Disclosure is being submitted via this amendment.

The examiner objected to the disclosure, citing several informalities.

The informalities on page 17, line 12; page 17, line 18; page 19, line 26; and page 21, lines 10-11 have been corrected via this amendment.

With respect to the alleged informality on page 21, line 22 to page 22, line 8, the examiner asks: "Should they be subsets?". Attached hereto, please find **Exhibit 2**. In Exhibit 2, the definition of a 'superset' is provided. As indicated on Exhibit 2 attached

hereto, a 'superset of said set of data' includes all of the data present within the 'set of data'; however, the 'superset of said set of data' contains additional data which is not present with the 'set of data'. The term 'superset' as used in this application utilizes the definition illustrated in Exhibit 2 attached hereto.

With respect to the alleged informality on page 24, lines 17, 19, and 25, the examiner indicates: "The use of supersets of data to develop subsets of simulation file is inconsistent." The use of 'superset' and 'subset', in the context of the discussion in the specification on page 24, lines 17, 19, and 25, is (in the opinion of the undersigned) appropriate and correct. Please refer to **Exhibit 3** and **Exhibit 4** attached hereto. In Exhibit 3, which represents figure 14 of the drawings illustrating the 'case manager', the set "new" is a 'set'. But two 'supersets' underlie the 'new' set; that is, the 'superset' 'new-1' and the 'superset' 'new-2'. The supersets 'new-1' and 'new-2' contain all the data which is present in the 'new' set, but the supersets 'new-1' and 'new-2' also contain additional data which is not present in the 'new' set. The operator can select either the 'new' set, or the 'new-1' superset, or the 'new-2' superset. If the 'new-2' superset is selected, the 'new-2' superset data will be executed by the simulator (unless that data is first edited in the case builder). In Exhibit 4, which represents figure 15 of the drawings illustrating the case builder wherein the aforementioned 'new-2' superset data (previously selected by the operator via the case manager of figure 14) is edited, "If the simulation file 93 is too large, in order to avoid overloading memory, the run manager 46c3 can select certain vectors 96 associated with only a 'subset of the simulation file' 93, and then the run manager 46c3 will 'submit run' 119..." (quote from page 24, lines 15-18). The 'superset' 'new-2' was (in our example) selected by the operator, the simulation file 93 of figure 15 of Exhibit 4 was too large, and, as a result, only a 'subset' of the simulation file 93 was submitted to the simulator for use by the simulator during the execution of the simulator. Thus, the use of 'superset' and 'subset' in the above context is entirely appropriate and correct.

The informalities on page 27, line 27; page 28, lines 13 and 14; page 35, line 12; and page 56, line 5 have been corrected via this amendment.

In connection with the informalities on page 59, lines 14 and 20, and page 60, lines 16 and 22, the 'view' and 'region' menu bar items were not shown in figures 25 and 26, respectively, because the 'view' and 'region' menu bar items were 'additional options' (not shown in figures 25 and 26) to be added in future releases of the software. See page 58, line 29: "Additional options will include:". See page 59, line 31: "Additional options will include:". However, the specification has been amended to indicate as follows: "Additional options (not shown in figure 25) will include:", on page 58, line 29; and "Additional options (not shown in figure 26) will include:", on page 59, line 31.

The examiner objected to claims 15 and 16. The objection to claim 16 has been corrected via this amendment. However, the undersigned can find no problem with respect to the portion of claim 15 cited by the examiner (page 72, lines 24-25) on page 5 of the office action. Refer now to **Exhibit 5** attached hereto. The examiner objects to the following language which appears in claim 15 (page 72, lines 24-28):

"run manager means responding to the set of edited case scenarios from the case builder means for submitting the edited case scenarios to a simulator, the simulator responding to the edited case scenarios from the run manager means by executing and thereby generating the set of simulation results, the set of simulation results from the simulator being stored in a results file;" (emphasis supplied)

Referring to Exhibit 5 attached hereto, and reading the above underlined quote from claim 15 (page 72, lines 24-25), the run manager **does do the following:** respond to the set of edited case scenarios from the case builder for performing the function of 'submitting the edited case scenarios to the simulator'. Thus, the above quoted language from claim 15 seems to be entirely clear (to the undersigned).

The examiner rejected claim 1 under 35 USC 102 as being clearly anticipated by Huang et al.

The examiner rejected claim 10 under 35 USC 102 as being clearly anticipated by Huang.

The examiner rejected claim 16 under 35 USC 102 as being clearly anticipated by Huang.

The examiner rejected claim 2 under 35 USC 103 as being unpatentable over Huang in view of Cowgill.

The examiner rejected claim 3 under 35 USC 103 as being unpatentable over Huang in view of Cowgill.

The examiner rejected claim 4 under 35 USC 103 as being unpatentable over Huang in view of Cowgill.

The examiner rejected claim 5 under 35 USC 103 as being unpatentable over Huang in view of Cowgill.

The examiner rejected claim 6 under 35 USC 103 as being unpatentable over Huang in view of Cowgill.

The examiner rejected claim 7 under 35 USC 103 as being unpatentable over Huang in view of Cowgill.

The examiner rejected claim 8 under 35 USC 103 as being unpatentable over Huang in view of Cowgill.

The examiner rejected claim 9 under 35 USC 103 as being unpatentable over Huang in view of Cowgill.

The examiner rejected claim 11 under 35 USC 103 as being unpatentable over Huang in view of Cowgill.

The examiner rejected claim 12 under 35 USC 103 as being unpatentable over Huang in view of Cowgill.

The examiner rejected claim 13 under 35 USC 103 as being unpatentable over Huang in view of Cowgill.

The examiner rejected claim 14 under 35 USC 103 as being unpatentable over Huang in view of Cowgill.

The examiner rejected claim 15 under 35 USC 103 as being unpatentable over Gunasekera in view of Huang and Cowgill.

The examiner rejected claim 17 under 35 USC 103 as being unpatentable over Huang in view of Cowgill.

The examiner rejected claim 18 under 35 USC 103 as being unpatentable over Huang in view of Cowgill.

The examiner rejected claim 19 under 35 USC 103 as being unpatentable over Huang in view of Cowgill.

These rejections are respectfully traversed.

The embodiments disclosed in the specification include a simulation system embodied in a software package called the 'Eclipse Office' software, which includes a case manager, a case builder, and a run manager as shown in figure 13 of the drawings. The case manager can be seen in Exhibit 3 attached hereto. The case manager includes a plurality of sets of data and a plurality of supersets of data which are formed in a 'tree like structure'. The supersets underlie corresponding ones of the sets in the tree like structure. For example, the superset 'new-1' underlies its corresponding set 'new' in the tree like structure of the case manager of Exhibit 3. An operator selects at least one of the sets or

supersets in the case manager of Exhibit 3. The selected sets or supersets can be edited in the case builder (46c2 of figure 13) and the edited sets or supersets of data are submitted to the simulator software (46b of figure 13) for execution.

The prior art cited by the examiner includes the Huang reference, the Cowgill reference, and the Gunasekera reference. The examiner cited only the Huang reference as a prior art reference allegedly showing/disclosing the 'tree like structure' of the case manager (the Cowgill and the Gunasekera references fail to disclose the 'tree like structure'). In particular, the examiner cited figure 59 of the Huang reference as an example of that 'tree like structure'. Figure 59 of the Huang reference is attached hereto as **Exhibit 6**. In Exhibit 6 attached hereto, upon examination of figure 59 of Exhibit 6, in an attempt to locate 'sets of data' and 'supersets of data', the only possible 'sets of data' and 'supersets of data' appear under the heading 'Customer' (on the right side of figure 59). The left side of figure 59 does not appear to include or disclose any 'sets of data' and 'supersets of data'. However, further examination of the 'Customer' side of figure 59 (of Exhibit 6 attached hereto) reveals that the supersets of data do NOT underlie the sets of data; rather, Huang's figure 59 has it reversed: the sets of data underlie the supersets of data. For example, in figure 59 of Exhibit 6 attached hereto, the 'set' called 'bottom customers' underlies the 'superset' called 'top & bottom customers'. In addition, there is another discrepancy or problem with respect to the Huang reference: it is difficult to determine in Huang whether an operator can select one or more 'sets of data' from the structure of Huang's figure 59, thereby generating 'selected data', and then submit the 'selected data' to a simulator for use by the simulator during its execution. The only discussion of Huang's figure 59 appears in column 109 (of the Huang reference – US 6,151,582), lines 51-61:

If the user wishes to view the customer-product tuple...that promotions are displayed for, or wishes to limit the promotions shown by choosing what promotion type, promotion class, and promotion intensity he wishes to analyze, the Promotion Selection Wizard may be invoked. The user selects the customer-product pairs that analysis is to take place on and can limit the selection by choosing what Promotion Type, Promotion Class and Promotion Intensity he wishes to analyze. When the OK button is clicked, the Promotion Calendar dialog box is populated with all promotions that match the selection criteria (See Fig. 59).

This is the only apparent discussion of Figure 59 in Huang. From the above paragraph alone, it is difficult to determine whether an operator can select data from the structure of figure 59 and then submit the selected data to a simulator for use by the simulator during its execution.

Consequently, the claims in the above identified application require a recitation of the following concept: a simulation system includes a case manager which further includes sets of data and supersets of said sets of data organized in a tree like structure, the supersets of data underlying corresponding ones of the sets of data in the tree like structure, an operator adapted to select one or more of the sets of data and the supersets of said sets of data; when said one or more of the sets of data and the supersets of the sets of data have been selected via the case manager by the operator, the resultant selected data will be submitted to a simulator for use by the simulator during its execution. None of the references cited by the examiner disclose, teach or suggest the fact that the supersets of the sets of data will underlie corresponding ones of the sets of data in the tree like structure. Accordingly, it is respectfully submitted that the claims in this application are patentable over the cited prior art, and an early notice of allowance is earnestly solicited.

Please find attached hereto a section entitled "Amendments to the specification and claims showing changes made thereto" which show any amendments made to the specification and claims of this application via this amendment.

Accordingly, in view of the foregoing amendments and remarks, reconsideration and allowance of claims 1 through 19 and new claims 20 and 23 is respectfully requested.

Please charge any additional fee and credit any overpayment to deposit account 07-1078.

Respectfully Submitted,

A handwritten signature in black ink, appearing to read "J. Bouchard", written over a horizontal line.

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Amendments to the specification and claims showing changes made thereto

The amendments made to the specification and claims of the above identified application are shown below, with brackets “[ ]” representing deletions, and underlining “\_\_\_” representing additions.

In the Abstract of the Disclosure

**Please delete the Abstract of the Disclosure and substitute, in its place, the following Abstract:**

--A simulation system [is responsive to a plurality of sets of input data for simulating an earth formation located in the vicinity of an oilfield reservoir, generating a set of simulation results in response to the simulation, and displaying the set of simulation results. The simulation system] includes a case manager adapted for organizing and managing [the] a plurality of sets of input data being used by the simulation system. The case manager includes a plurality of case scenarios organized in a tree-like structure, some case scenarios being supersets of other case scenarios in the tree-like structure. An operator selects one or more of the case scenarios in the case manager. A case builder receives keywords associated with the one or more of the case scenarios selected by the operator [in addition to keywords originating from one or more pre-processor programs and possibly raw data], allowing the operator to [edits and/or changes] edit or change [all] the keywords from the selected case scenarios when necessary [and pre-processor keywords in response to editing actions taken by the operator], and [, responsive thereto,] generates a set of edited keywords representing edited case scenarios. A run manager [responds to the set of edited case scenarios from the case builder by submitting] submits the edited case scenarios to a simulator [, the simulator responding to the edited case scenarios from the run manager by executing and thereby generating] which generates a set of simulation results [, the set of simulation results from the simulator being]

that are stored in a results file for subsequent display and viewing. [The run manager receives the set of simulation results from the results file in addition to the set of edited case scenarios from the case builder thereby enabling an operator to monitor and compare via the run manager the set of simulation results received from the results file with the set of edited case scenarios received from the case builder. A results viewer will display the set of simulation results generated by the simulator and a report generator will generate one or more reports which record the set of simulation results.] This Abstract is given for the sole purpose of allowing a searcher to easily determine the content of the disclosure in this application--

#### In the Specification

Please amend the specification as follows:

**Page 17, line 9, delete the paragraph extending between lines 9 through 12 and substitute, in its place, the following paragraph:**

--In figure 9, an example of the "set of simulation results associated, respectively, with a set of grid blocks of the simulation grids" 48, which are displayed on the 3D viewer 44e of the workstation 44 of figures 6, 7, and 8, is illustrated [in figure 9].--

**Page 17, line 18, delete the paragraph extending between lines 18 through 28 and substitute, in its place, the following paragraph:**

--In figure 10, the workstation 44 of figure 7 is illustrated again [in figure 10]. However, in figure 10, the storage medium (CD-Rom) 46 stores the Flogrid software 46a, the Eclipse simulator software 46b, and the Eclipse Office software 46c of the present invention interposed between the Flogrid software 46a and the Eclipse simulator software 46b. When the CD-Rom 46 is inserted into the workstation 44, the Eclipse Office software 46c in addition to the Flogrid software 46a and the Eclipse simulator software 46b are loaded from

the storage medium (CD-Rom) 46 into the workstation memory 44a of figure 10. As a result, as shown in figure 10, the workstation memory 44a now stores three software packages: the Flogrid software 46a, the Eclipse office software 46c of the present invention, and the Eclipse simulator software 46b.--

**Page 19, line 22, delete the paragraph extending between page 19, line 22 and page 20, line 19 and substitute, in its place, the following paragraph:**

--In operation, in figure 12, the Eclipse Office software 46c receives the data files associated with the raw data 50 and the data files generated by the pre-processor programs 52 and, responsive thereto, the Eclipse Office software 46c will collect all such data files and pass edited versions of such data files to the Eclipse simulator software 46b. The Eclipse simulator software 46b [be] is executed by workstation processor 44d of figure 10. However, during the execution of the Eclipse simulator software 46b by the workstation processor 44d of figure 10, the Eclipse simulator software 46b will receive and utilize the data files associated with the raw data 50 of figure 12 and/or the data files generated by the pre-processor programs 52 of figure 12; and, during that execution of the Eclipse simulator software 46b, in response to these aforementioned data files, the Eclipse simulator software 46b will be generating a "set of simulation results". That "set of simulation results" will be passed back from the Eclipse simulator software 46b to the Eclipse Office software 46c. When the Eclipse Office software 46c receives that "set of simulation results", the Eclipse Office software 46c will be re-transmitting that "set of simulation results" to the "recorder or display or 3D viewer" 44e of figures 10 through 12 for displaying and/or recording that "set of simulation results" on the 3D viewer 44e at each instantaneous point in time. Bear in mind that the "set of simulation results" will be generated from the Eclipse simulator software 46b during its execution by the workstation processor 44d, and that "set of simulation results" will be instantaneously displayed, by the Eclipse Office software 46c at each point in time, on the "recorder or display or 3D viewer" 44e of figure 12. As a result, the Eclipse Office software 46c will instantaneously "display or report results" 44e1 in response to the raw data files 50 and/or in

response to the data files provided by the pre-processor programs 52, both during and after the execution of the Eclipse simulator software 46b by the workstation processor 44d. Refer now to figure 13 for a more complete description of this functional operation.--

**Page 21, line 9, delete the paragraph extending between page 21, line 9 and page 21, line 12 and substitute, in its place, the following paragraph:**

--The functions provided by the case manager 46c1, the case builder 46c2, the run manager 46c3, and the results files 46c4 in addition to the results viewer [44e1] 1A and the report generator [44e2] 1B, will become evident in the following paragraphs with reference to figures 14 through 17 of the drawings.--

**Page 27, line 14, delete the paragraph extending between page 27, line 14 and page 28, line 10 and substitute, in its place, the following paragraph:**

--However, in addition to the input "raw data" 50 and the other input data originating from the preprocessor programs 52 (which are all being made available to the case builder 46c2 of figure 13), the case/project manager 46c1 of figure 13, in accordance with one major aspect of the present invention, also contains a plurality of additional "test data files" which can also be made available to the case builder/data manager 46c2. Those additional "test data files" are illustrated in figure 14. In figure 14, those additional "test data files" are stored in the case/project manager 46c1 in a "tree-like" fashion. That is, those "test data files" are stored in the case/project manager 46c1 of figure 13 in the form of a "tree". For example, the broadest category of the test data files or "case scenarios" stored in the case/project manager 46c1 is the "new" 56 test data file of figure 14. However, if the user/operator wants to select certain other supersets of that "new" 56 test data file, the operator would then select either the "new-1" 58 superset test data file, or the "new-2" 60 superset test data file. On the other hand, if the operator wants to select still other supersets of the "new-1" 58 superset test data file or the "new-2" 60 [subset] superset test data file, the operator can select any one or more of the following supersets of

the superset test data files 58 or 60: supersets 62, 64, 66, 68, 70, 72 for the superset test data file 58, and supersets 74, 76, 78, or 80 for the superset test data file 60 of figure 14. Each superset of the test data files of the case manager 46c1 of figure 14 contains certain unique parameters which are useful when running the Eclipse simulator software 46b. As a result, the operator sitting at the workstation 44 of figure 10 may want to select one or more of the supersets of test data files 56 through 80 in figure 14 in order to study the resulting "results" stored in the results files 46c4 of figure 13 which are generated when the selected one or more supersets of test data files 56 through 80 are used by the simulator 46b. The operator can study those "results", stored in the results files 46c4, by viewing those "results" on the results viewer 1A of figure 13 or reading a report of those results on a report generated by the report generator 1B of figure 13.--

**Page 28, line 12, delete the paragraph extending between page 28, line 12 and page 28, line 29 and substitute, in its place, the following paragraph:**

--In any event, in figure 13, if the raw data 50 is received by the case builder 46c2, the case builder 46c2 will allow the operator to edit that raw data 50, and the case builder 46c2 of figure 13 will present the edited raw data [50] to the run manager 46c3 for submission of that edited raw data [50] to the Eclipse simulator 46b. On the other hand, if the keyword data from the preprocessor programs 52 are received by the case builder 46c2, the case builder 46c2 will allow the operator to edit the preprocessor program 52 keyword data, and the edited preprocessor program keyword data will be submitted by the case builder 46c2 to the run manager 46c3 for submission of that data to the Eclipse simulator 46b. However, if the operator selects one or more of the sets or supersets of the test data files 56 through 80 in the case manager 46c1 of figure 14, the one or more selected sets or supersets of test data files in the case manager 46c1 (one or more of 56 - 80) will be submitted by the case manager 46c1 to the case builder 46c2 of figure 13, and the case builder 46c2 will allow the operator sitting at the workstation 44 to edit those test data files. The resulting edited test data files will be submitted by the case builder 46c2 to the

run manager 46c3 for submission of the edited test data files to the Eclipse simulator 46b.--

**Page 35, line 10, delete the paragraph extending between page 35, line 10 and page 35, line 13 and substitute, in its place, the following paragraph:**

--The Eclipse Office software 46c provides tools to allow for the generation of grid geometry and grid properties, including maps, faults, boundaries, wells, aquifers, layers, grid properties, [and] simulation grid builder, and other general abilities. Each of these will be discussed in detail, as follows:--

**Page 56, line 5, delete this line on page 56, line 5 and substitute, in its place, the following line:**

--b) [Initialization] Initialisation – Block 150--

**Page 58, line 29, delete this line on page 58, line 29 and substitute, in its place, the following line:**

--Additional options (not shown in figure 25) will include:--

**Page 59, line 31, delete this line on page 59, line 31 and substitute, in its place, the following line:**

--Additional options (not shown in figure 26) will include:--

### In the Claims

Please amend the following claims:

1. (amended) In a simulation system used by an operator and including a source of input data, a display, and a simulator adapted to be executed by a processor and generating a set of simulation results during the execution in response to said input data, an organizing and managing system operatively interconnected between said source of input data and said simulator and said display, comprising:

a case manager adapted for storing a plurality of sets and supersets of test data files, said sets and supersets of test data files being stored in said case manager in the form of a tree like structure, said supersets underlying corresponding ones of said sets in said tree like structure, one or more of said sets and said supersets of said test data files adapted to be selected by said operator; and

editing means responsive to said one or more of said sets and said supersets of said test data files selected by said operator via said case manager and responsive to said input data for editing said test data files and said input data in response to editing actions taken by said operator and generating a set of edited test data files, said simulator generating said set of simulation results during the execution of said simulator in response to said set of edited test data files.

10. (amended) In a simulation system used by an operator, a method for generating a set of simulation results in response to a set of input data and displaying said set of simulation results, comprising the steps of:

storing said input data in a case manager storage medium in the form of a tree like structure, said input data including a plurality of sets of data and a plurality of supersets of said data, said sets of said data and said supersets of said data being stored in said case manager storage medium in the form of said tree like structure, said supersets underlying corresponding ones of said sets in said tree like structure, said sets of said data and said supersets of said data adapted to be selected by said operator;

generating said sets of said data from said case manager storage medium when said sets of data are selected by said operator;

submitting said sets of data to a simulator in response to the generating step, said simulator executing and generating said set of simulation results in response to said sets of data; and

displaying said set of simulation results.

15. (amended) A simulation system responsive to a plurality of sets of input data for simulating an earth formation located in the vicinity of an oilfield reservoir, generating a set of simulation results in response to the simulation, and displaying the set of simulation results, comprising:



case manager means for organizing and managing the plurality of sets of input data being used by the simulation system, said case manager means including a plurality of sets of case scenarios and a plurality of supersets of case scenarios organized in a tree-like structure, some of said case scenarios being supersets of other of said case scenarios in the tree-like structure, said supersets underlying corresponding ones of said sets in said tree like structure, an operator selecting one or more of the case scenarios in the case manager;

case builder means for receiving said one or more of the case scenarios selected by the operator, editing or changing a set of data disposed within the selected case scenarios in response to editing actions taken by the operator, and, responsive thereto, generating a set of edited case scenarios;

run manager means responding to the set of edited case scenarios from the case builder means for submitting the edited case scenarios to a simulator, the simulator responding to the edited case scenarios from the run manager means by executing and thereby generating the set of simulation results, the set of simulation results from the simulator being stored in a results file;

results viewer means for displaying the set of simulation results generated by the simulator, the results viewer displaying the set of simulation results and any instantaneous changes being made to the set of simulation results at any point in time; and

report generator means for generating one or more reports which record the set of simulation results.

16. (amended) A device, comprising:

means for storing instructions which are executable by a processor of a computer, said instructions adapted for use by a simulation system for generating a set of simulation results in response to a selected set of data and displaying the set of simulation results, said instructions when executed by said processor of said computer conducting a process comprising the steps of:

presenting for display a tree like structure representing a plurality of sets of data and a plurality of supersets of said data which are stored therein in the form of said tree like structure, said supersets underlying corresponding ones of said sets in said tree like structure, said plurality of sets of data and said plurality of supersets of data adapted to be selected by an operator via said tree like structure on said display;

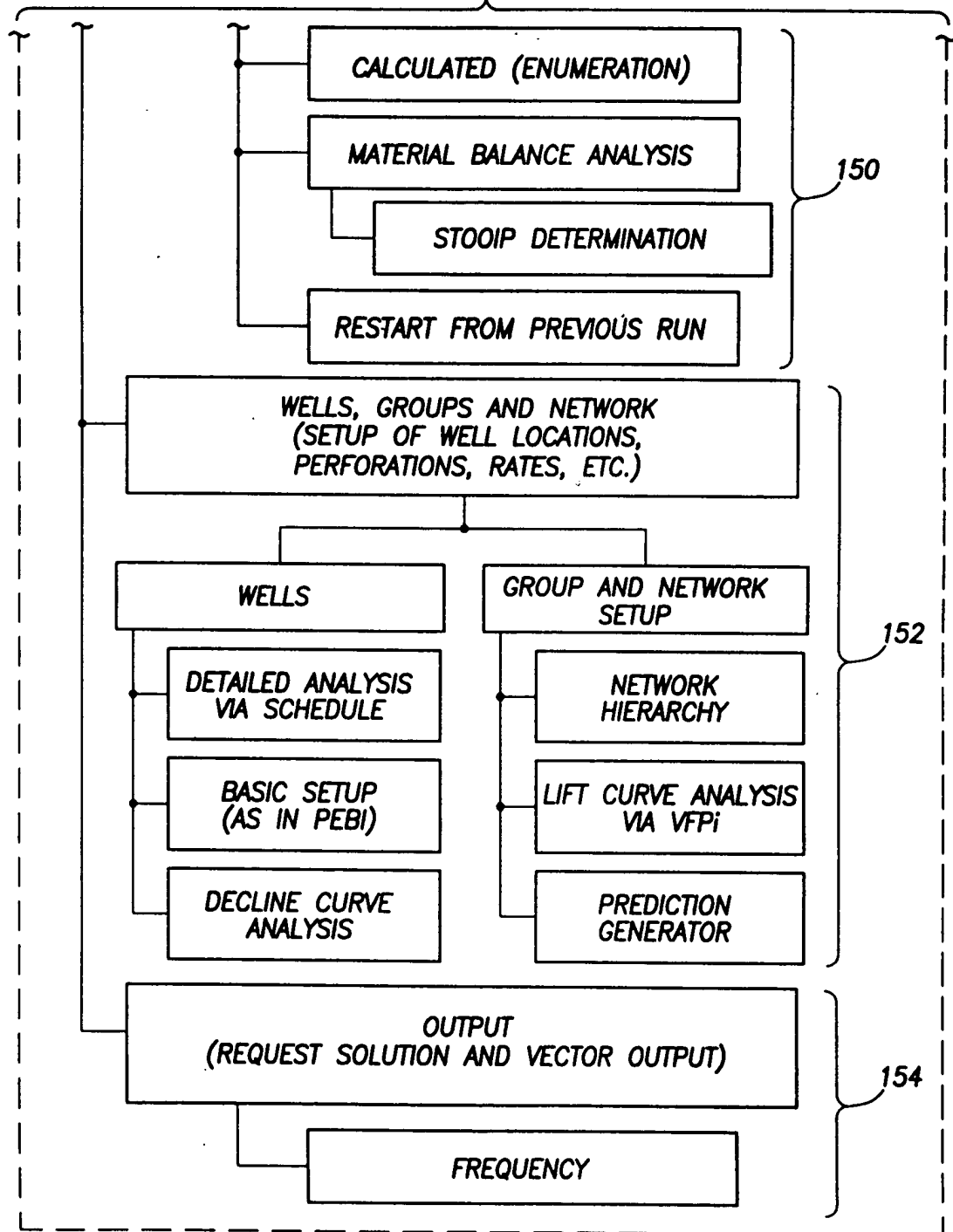
presenting for display an editing means when said plurality of sets of data or said plurality of [superset] supersets of data are selected by said operator via said tree like structure on said display, said data adapted to be edited by said operator via editing means on said display thereby generating edited data; and

submitting said edited data to a simulator when said data is edited by said operator via said editing means on said display.

22b2  
+ FIG. 22b1

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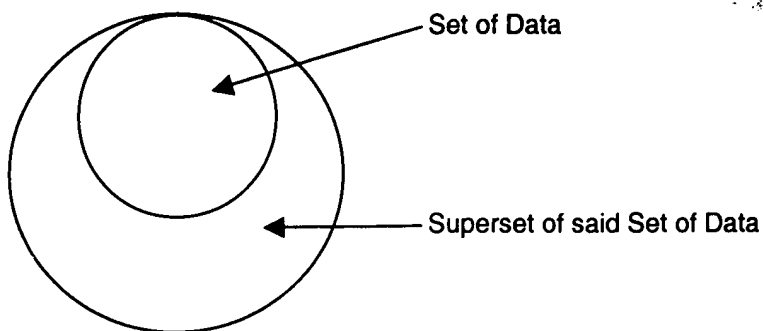
FROM FIG. 22b1



46c2

EXHIBIT

1

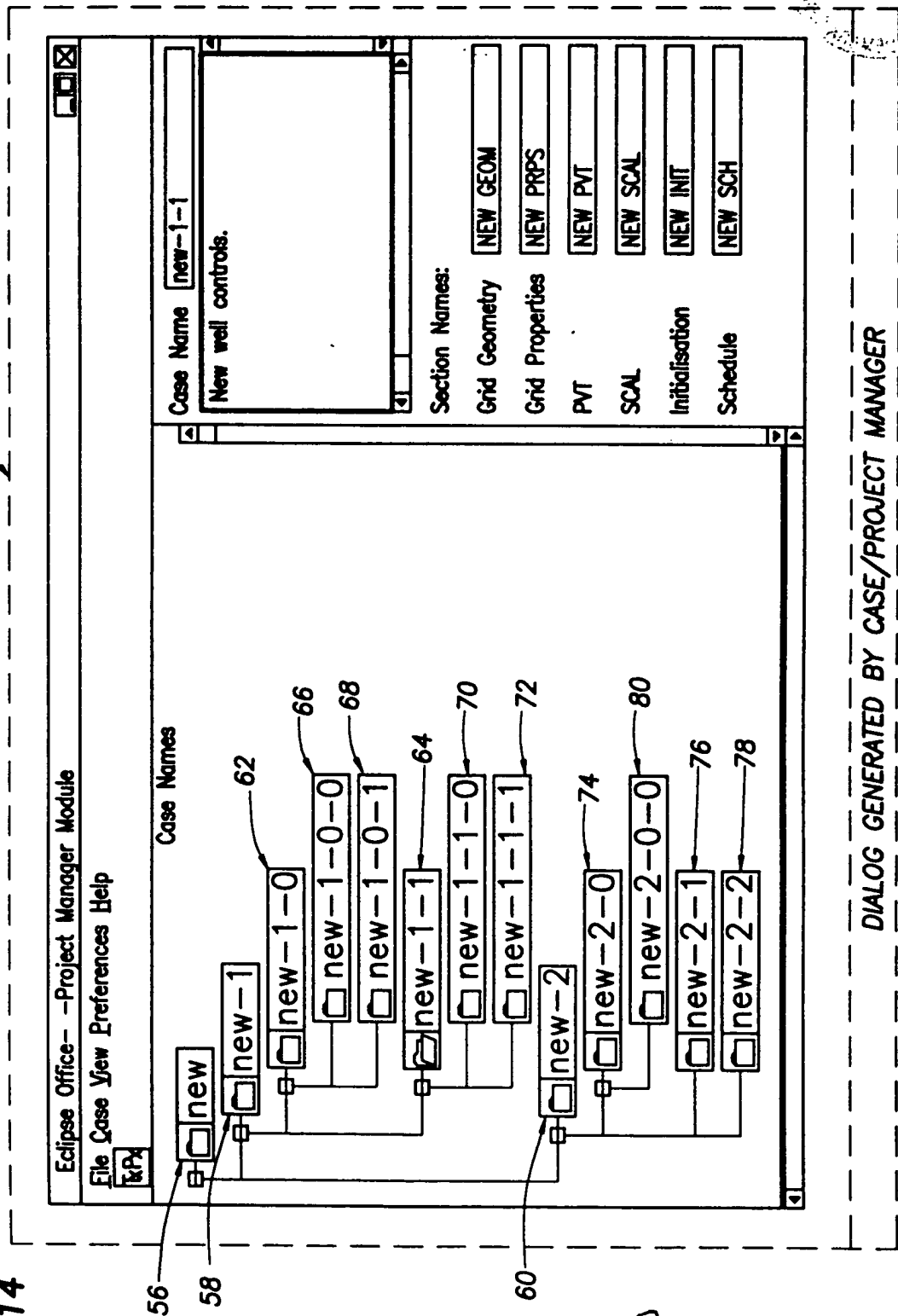


**EXHIBIT 2**

FIG.14

-46c1

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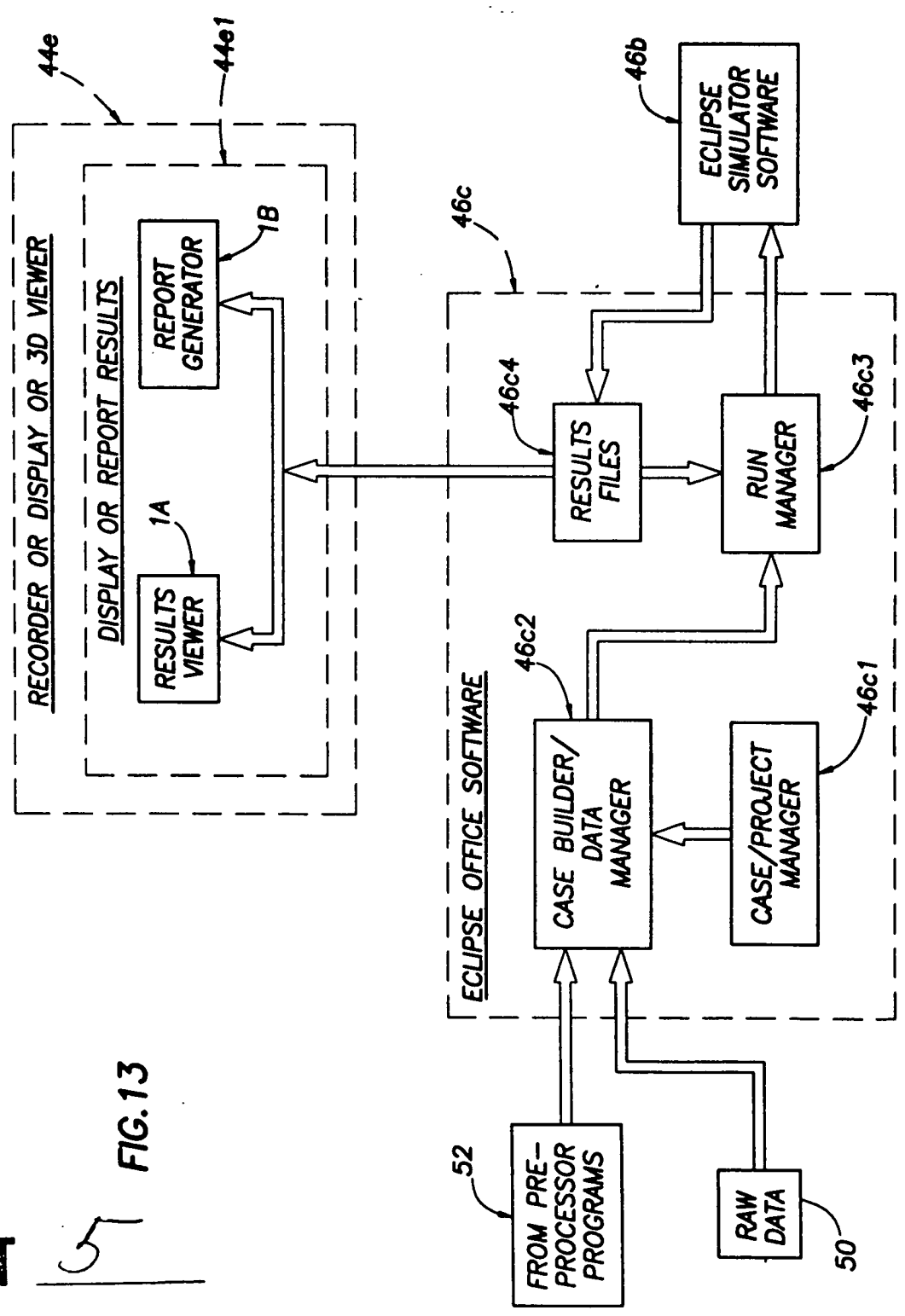
EXHIBIT

3



# EXHIBIT

FIG. 13



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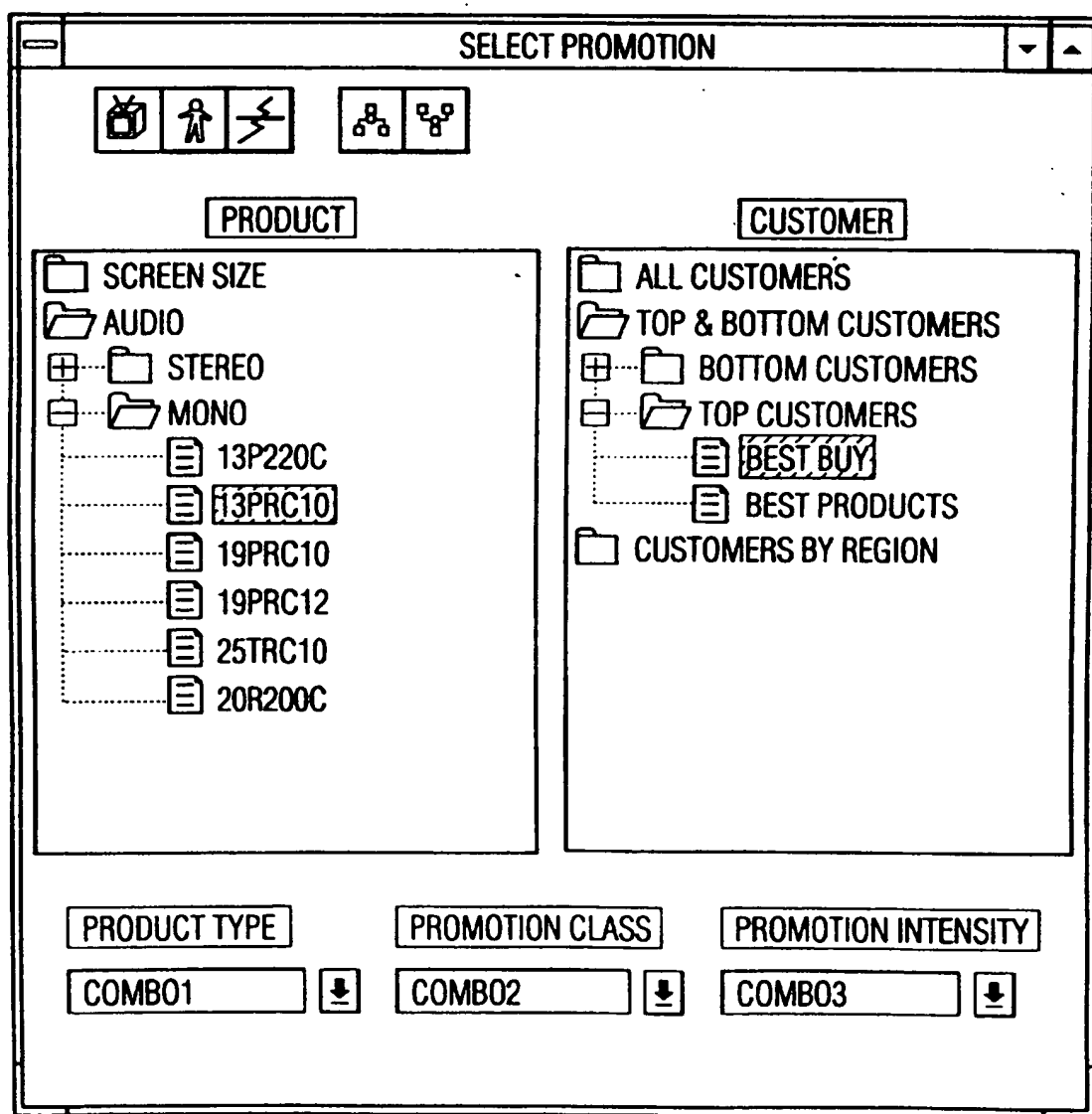


FIG. 59

EXHIBIT 6